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Nuclear LLC

FEB 14 2013

LR-N13-0025

10CFR 50.73

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

LER 272/2012-005
Salem Nuclear Generating Station Unit 1
Facility Operating License No. DPR-70
NRC Docket No. 50-272

SUBJECT: Reactor Trip Due to Failure of the Main Power Transformer Overexcitation Relay

The Licensee Event Report, "Reactor Trip Due to Failure of the Main Power Transformer Overexcitation Relay" is being submitted pursuant to the requirements of the Code of Federal Regulations, 10CFR 50.73(a)(2)(iv)(A), for Reactor Protection and Auxiliary Feedwater system actuations.

The attached LER contains no commitments. Should you have any questions or comments regarding the submittal, please contact David Lafleur of Salem Regulatory Assurance at 856-339-1754.

Sincerely,

Carl J. Fricker
Site Vice President – Salem

Attachments (1)

IE22
NRR

cc Mr. W. Dean, Administrator – Region 1, NRC
Mr. John Hughey, Licensing Project Manager – Salem, NRC
Ms. E. Bonney, USNRC Senior Resident Inspector, Salem
Mr. R. Rolph, USNRC Resident Inspector, Salem
Mr. P. Mulligan, Manager IV, NJBNE
Mr. T. Joyce, President and Chief Nuclear Officer – Nuclear
Mr. T. Cachaza, Salem Commitment Tracking Coordinator
Mr. L. Marabella, Corporate Commitment Tracking Coordinator
Mr. D. Lafleur, Salem Regulatory Assurance

NRC FORM 366 (10-2010) U.S. NUCLEAR REGULATORY COMMISSION

APPROVED BY OMB: NO. 3150-0104 EXPIRES: 10/31/2013

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the Records and FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

LICENSEE EVENT REPORT (LER)

1. FACILITY NAME	2. DOCKET NUMBER	3. PAGE
Salem Generating Station - Unit 1	05000272	1 of 3

4. TITLE

Reactor Trip Due to Failure of the Main Power Transformer Overexcitation Relay

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
12	21	2012	2012	0 0 5	0	02	14	2013		DOCKET NUMBER

9. OPERATING MODE

1

10. POWER LEVEL

100%

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR§: *(Check all that apply)*

☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)
☐ 20.2203(a)(2)(i)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)
☐ 20.2203(a)(2)(ii)	☐ 50.36(c)(1)(ii)(A)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2203(a)(2)(iii)	☐ 50.36(c)(2)	☐ 50.73(a)(2)(v)(A)	☐ 73.71(a)(4)
☐ 20.2203(a)(2)(iv)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(v)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ OTHER
☐ 20.2203(a)(2)(vi)	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	Specify in Abstract below or in NRC Form 366A

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME	TELEPHONE NUMBER (Include Area Code)
David Lafleur, Senior Compliance Engineer, Salem Regulatory Assurance	(856) 339-1754

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANU-FACTURER	REPORTABLE TO EPIX
B	EL	59	GE	Y					

14. SUPPLEMENTAL REPORT EXPECTED

☐ YES *(If yes, complete 15. EXPECTED SUBMISSION DATE)* ☒ NO

15. EXPECTED SUBMISSION DATE

MONTH	DAY	YEAR

ABSTRACT *(Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)*

On December 21, 2012, at 0527 hours, Salem Unit 1 was in Mode 1 operating at 100% rated thermal power when it experienced an automatic reactor trip due to a turbine trip. The turbine trip was the result of a Main Generator trip due to a Main Power Transformer overexcitation signal. An automatic start of the Auxiliary Feedwater system occurred as expected on unit trip due to low Steam Generator water levels. The unit was stabilized in Mode 3, Hot Standby conditions and operators transitioned to normal operating procedures at 0621 hours. The cause of this event is attributed to setpoint drift of the Main Power Transformer General Electric type STV Overexcitation trip relay.

This event is being reported under 10 CFR 50.73(a)(2)(iv)(A), for actuation of the Reactor Protection and Auxiliary Feedwater systems.

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER	
Salem Generating Station Unit 1	05000272	2012	- 0 0 5 -	00	2 of 3

NARRATIVE

PLANT AND SYSTEM IDENTIFICATION

Westinghouse – Pressurized Water Reactor (PWR/4)

Systems – Main Generator {EL/GEN}
– Main Power Transformer {EL/XFMR}

* Energy Industry Identification System {EIIS} codes and component function identifier codes appear as {SS/CCC}

IDENTIFICATION OF OCCURRENCE

Event Date: December 21, 2012

Discovery Date: December 21, 2012

CONDITIONS PRIOR TO OCCURRENCE

Salem Unit 1 was in Operational Mode 1 operating at 100% reactor thermal power. No additional structures, systems or components were inoperable at the time of the discovery that contributed to the event.

DESCRIPTION OF OCCURRENCE

On December 21, 2012, at 0526 hours, Salem Unit 1 was in Mode 1 operating at 100% rated thermal power when control room operators received an overhead annunciator alarm associated with Main Power Transformer (MPT) {EL/XFMR} Over-Excitation. An automatic reactor trip occurred due to a turbine trip with the P-9 permissive (reactor power greater than 49%) at 0527 hours. Operators entered Emergency Operating Procedure 1-EOP-TRIP-1, Reactor Trip or Safety Injection and then transitioned to 1-EOP-TRIP-2, Reactor Trip Response. An automatic start of the Auxiliary Feedwater system occurred as expected on unit trip due to low Steam Generator (SG) {SJ/SG} water levels. The unit was stabilized in Mode 3, Hot Standby conditions and operators transitioned to normal operating procedures at 0621 hours.

The turbine trip was the result of an MPT Overexcitation signal to the Automatic Voltage Regulator (AVR) which initiated Main Generator {EL/GEN} protection logic. Testing revealed that the MPT General Electric (GE) type STV relay was actuating below the required setpoint. This relay had not actuated through at least two previous high voltage grid transient conditions. The Overexcitation trip actuation setpoint was satisfactorily tested at its intended voltage range with repeatable results after the potentiometers were exercised. A plant Temporary Configuration Change was implemented to remove

the relay from the circuit. Backup generator overexcitation protection is provided from a similar GE type STV relay monitoring the Generator Bushing Potential Transformers and redundant protection is provided by the AVR system Voltage/Hertz (V/Hz) Protection fault function. If the generator voltage exceeds the V/Hz protection setting, an overexcitation trip is initiated.

CAUSE OF OCCURRENCE

The cause of this event is attributed to GE type STV relay potentiometer setpoint drift for the MPT overexcitation protection.

PREVIOUS OCCURRENCES

A review of LERs for Salem Units 1 and 2 for the previous three years did not identify any similar events.

SAFETY CONSEQUENCES AND IMPLICATIONS

There were no safety consequences associated with this event. Operators appropriately responded to the automatic reactor trip and plant response was as expected and designed. All safety systems operated as required.

A review of this event determined that a Safety System Functional Failure (SSFF) as defined in NEI 99-02, Regulatory Assessment Performance Indicator Guideline, did not occur.

CORRECTIVE ACTIONS

1. The failed GE type STV relay was removed from the protection circuit.
2. Replacement of the GE type STV relay will be performed in the next Salem Unit 1 refueling outage.
3. A causal evaluation is in progress.

COMMITMENTS

No commitments are made in this LER.